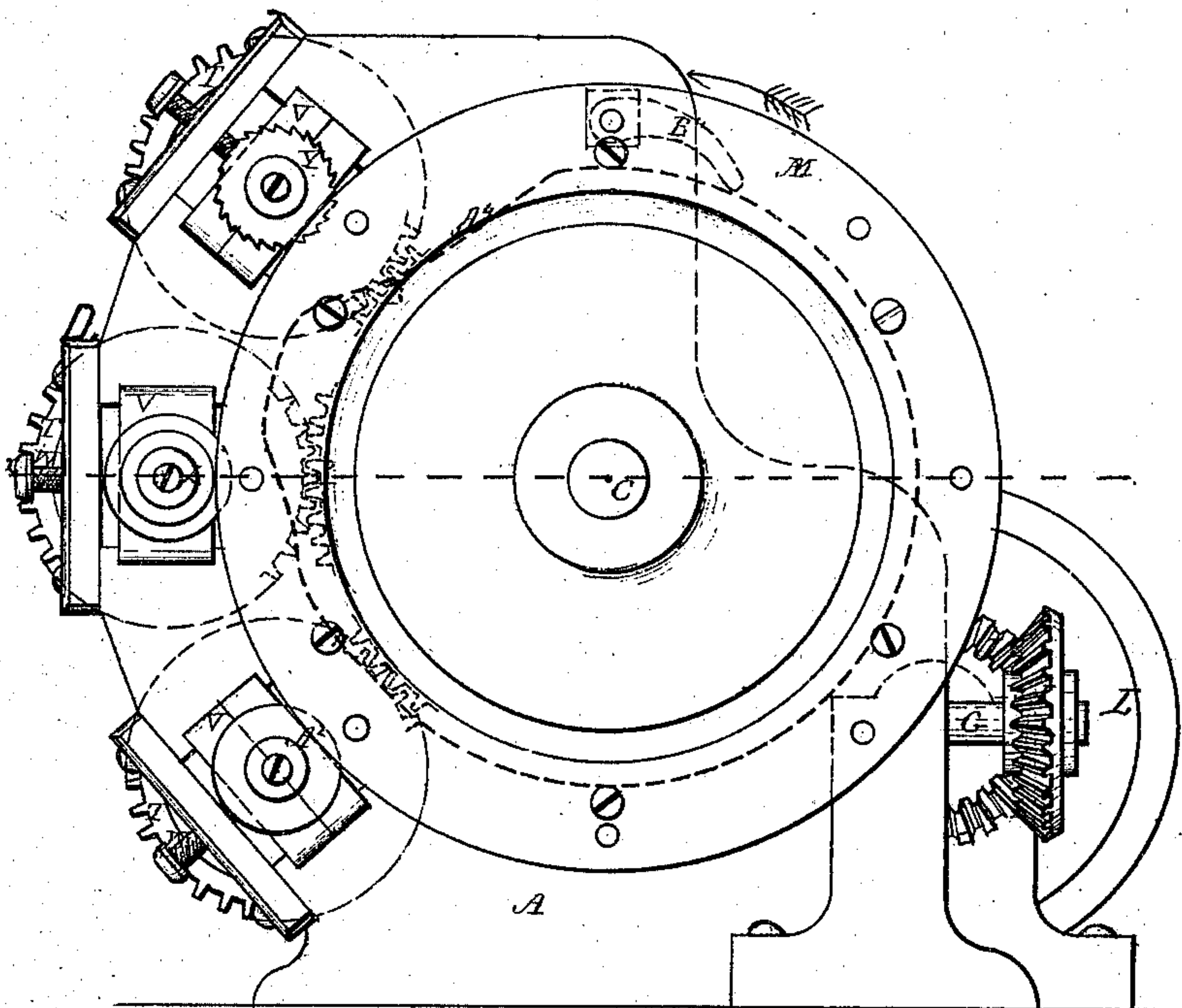


J. B. Blanchard, ^{2, Sheets, Sheet 1,}

Manf. Needles.

No. 106,026.

Patented Aug. 2, 1870.

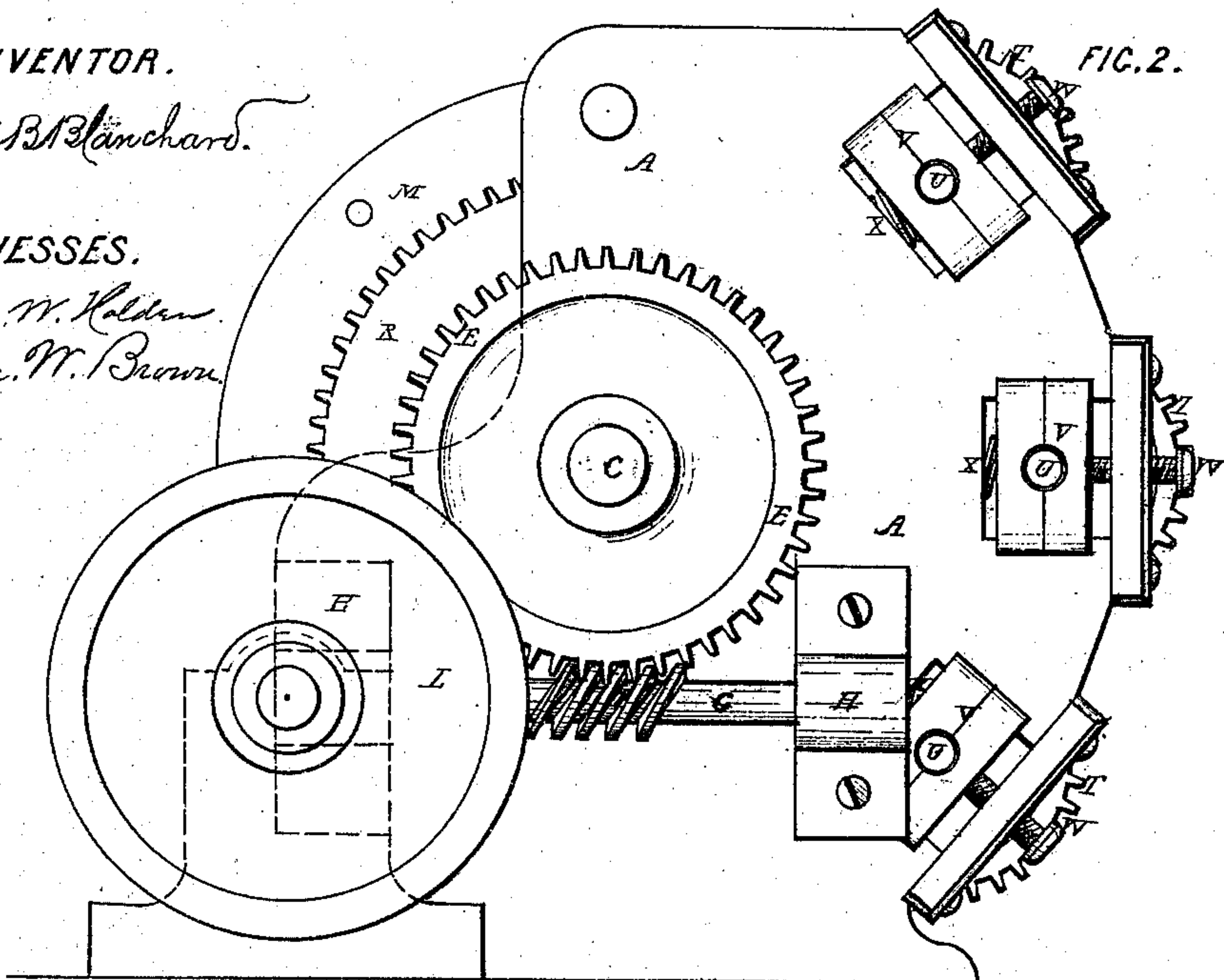


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WITNESSES.

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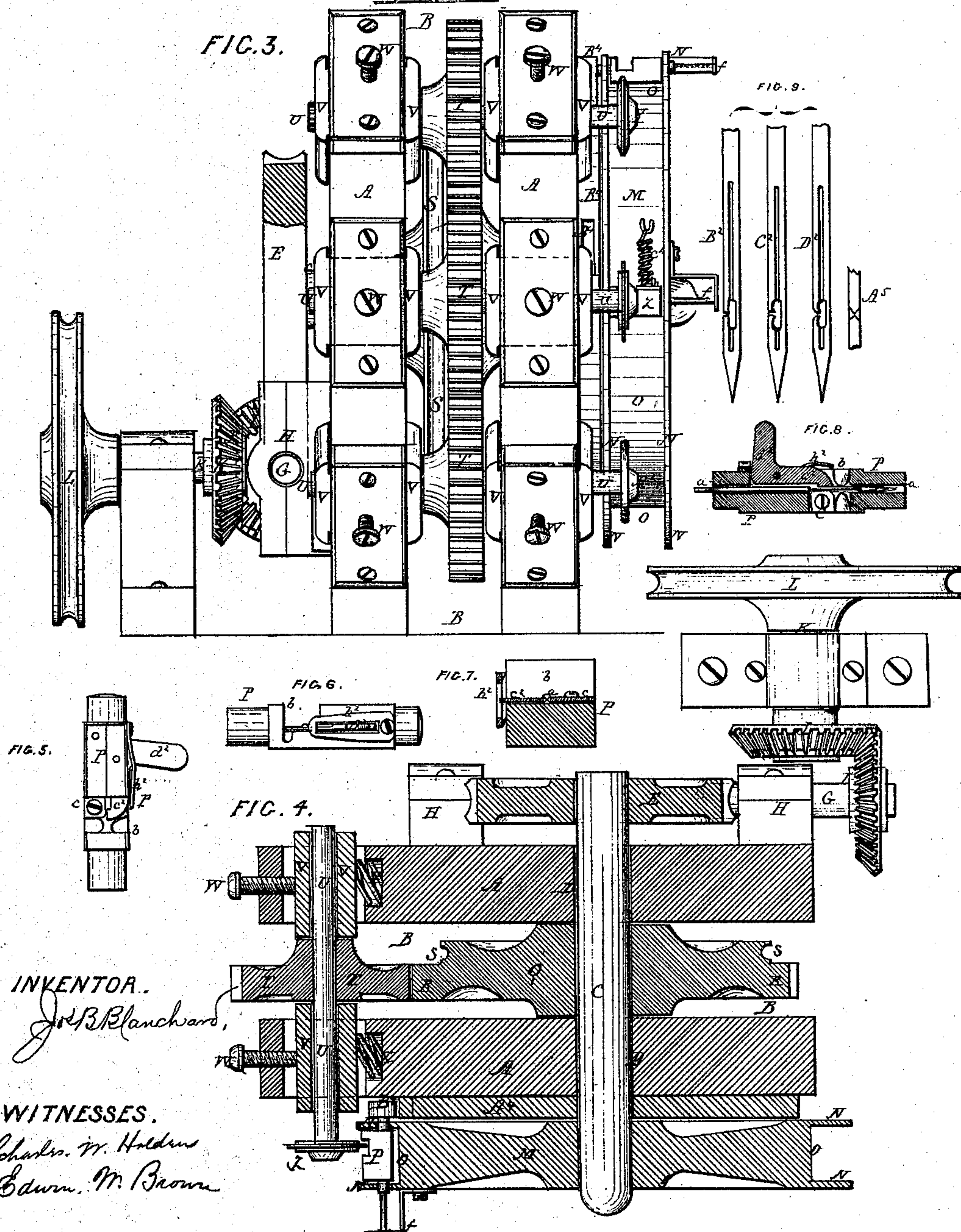
J. B. Blanchard, 2. Sheets, Sheet 2.

Manf. Needles.

No. 106,026.

Patented Aug. 2. 1870.

Plate 2.



UNITED STATES PATENT OFFICE.

JOSEPH B. BLANCHARD, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR MANUFACTURING NEEDLES.

Specification forming part of Letters Patent No. **106,026**, dated August 2, 1870.

To all persons to whom these presents shall come:

Be it known that I, JOSEPH B. BLANCHARD, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Machines for Manufacturing Sewing-Needles; and that the following is a full and exact description of the same, reference being had to the accompanying plates of drawing.

My invention consists in the combination of cutting-wheels with one or more needle-holders, located on the periphery of a rotating wheel, and arranged thereon so that the axis of the needle shall lie in a plane perpendicular to the plane of the cutter-wheels.

It also consists in the combination therewith of a cutter, to cut beveling the ends of the lateral opening or slit leading into the eye of the needle.

It also consists in the needle-holder, constructed substantially as hereinafter described.

It further consists in mechanism for imparting oscillatory motion to the needle-holders.

It finally consists in a stop or bearing, combined and arranged with certain parts, substantially as hereinafter described, for the purpose of affording means of setting the eye of the needle in the holder to the proper plane for the action of the cutting devices.

In Plate 1, Figures 1 and 2 are elevations of the machine, but from opposite sides. In Plate 2, Fig. 3 is an elevation of the machine at one end; Fig. 4, a horizontal section taken in the plane of the line $x\ x$, Fig. 1, Plate 1; Figs. 5, 6, 7, and 8, views in detail of the needle-holder, detached, but upon an enlarged scale from the needle-holders shown in the drawing of the machine itself; Fig. 9, views of needles, illustrating the effects produced by the separate cutters shown as employed in the machine.

A in the drawing represents two uprights or frames, arranged parallel to each other, and fastened together by means of bolts or other suitable means, leaving a space, B, between them; C, a shaft, arranged horizontally between the uprights, turning in bearings D, thereof, and projecting from each of the same; E, a worm-gear wheel, fixed on one projecting end of shaft C; and F, a worm, engaging with said worm-gear wheel E at its lower side. This worm F is on a horizontal shaft, G, ar-

ranged parallel to the outside face of the upright A, turning in bearings H, secured thereto. The shaft G has a miter-gear wheel, I, fixed to it, interlocking with a similar miter-gear wheel, J, fastened to a horizontal shaft, K, having grooved pulley L, by and through which power is communicated to the shaft G, and thus, through the connections described, to the horizontal shaft C, turning in uprights A, as aforesaid; M, a wheel fastened to shaft C, outside of uprights A, at the opposite end to that carrying worm-gear wheel E. This wheel is provided with parallel projecting flanges N, in which, and between or across the edge O of the wheel, are to be arranged, around the wheel, at suitable distances, holders P, suitable to receive a needle, and hold it with at least one side or wall of its eye exposed. The construction of these needle-holders will be hereinafter particularly described.

On the shaft C, between uprights A, is arranged a wheel, Q, so as to turn loose thereon. This wheel Q is constructed around its periphery both as a gear, R, and grooved pulley S, the one alongside of the other, and to it by the pulley part power is to be connected by a belt in any suitable manner, driving it and, through it, the devices to be hereinafter described.

T, a series of gear-wheels, arranged to interlock, between the uprights A, with the gear portion R of wheel Q. These gear-wheels T are hung by the shafts U in separate bearing-blocks V, arranged in the uprights for adjustment in and out in radial lines from the center of the shaft C, set-screws W and springs X being provided for such purpose, and to hold the blocks firm and steady.

To the upper gear-wheel shaft U of the series T, and in a plane between the flanges N to wheel M, is fixed a circular wheel, Y, constructed around its edge or periphery as a saw suitable for cutting into the material of which a needle is composed.

To the gear-wheel shaft U, next in position to the one carrying saw Y, a circular wheel, Z, is secured, but constructed with a knife-edge; and to the next gear-wheel is secured a cutting-wheel, A², of suitable shape to produce a bevel or incline cut in a direction from each side of its centerline. These three wheels, saw-blade, knife, and bevel-cutter are of the

same diameter, and when in position upon the machine should be arranged to project sufficiently within the wheel M beyond the periphery of its flanges N to act upon a needle placed in a holder located in said wheel.

By and through the connecting gearing described for the series of cutter-wheels they are all driven, and in the same direction, receiving, as is obvious, motion from a common gear-wheel, R, driven as before explained.

The operation of the mechanism above described is to revolve the cutter-wheels, and to revolve the wheel carrying the needle-holders, provided the necessary belt-connections are made, as before described, with a suitable driving-power, the needle-holder wheel turning in the direction represented by arrow in the drawing—that is, toward upper cutters, with the cutters turning in the same direction—and thereby carrying the needles held by them the one after the other, and to the several cutters in regular order and succession, when, having passed by the last and lower cutting-wheel, the needles are removed from the holders, and others are inserted before the holders again reach the plane of action of the first of the series of cutting-wheels.

By the several cutting-wheels, which are arranged for acting in the same vertical plane, a needle carried by a holder to each of them, the one after the other, by the revolving of the wheel M, is, through the first one, cut partly through one wall of the eye, as shown by the needle B², Fig. 9, by the second wheel cut clear through and the ends of the lateral slit bent in, (see needle C², Fig. 9,) and by the third wheel the sides of the said lateral slit made beveling or inclined toward each other. (See needle D², Fig. 9.)

By properly adjusting the first cutter in or out from the center of the wheel-carrying needle-holders, the depth of the slit cut by it in the needle can be made more or less, and if set in sufficiently toward the said wheel-center, a slit can be cut entirely through into the eye, forming an open-eyed needle by the operation of that one cutter, in lieu of completing the cut through into the eye by the operation of the next and second cutter, which, as before stated, produced at the same time it cut projections inside the eye.

The holder for a needle is shown in detail in Figs. 5, 6, 7, and 8, and is constructed of any suitable material, metal being preferred, in or about the form substantially as shown. *a*, an opening extending through, or nearly so, the holder, which opening is, inside, of suitable size for the reception of the shank or barrel of the needle.

The holder at *b*, on one side, is cut out to the center opening, *a*, so as to expose the shank of the needle in said opening *a* at such point, which is at and about the eye to the needle. The surface at *b* is beveled on each side from the center line of the holders. *c c*², jaws for fastening a needle in the holder. These jaws *c c*² are two in number, one, *c*,

fixed, and the other, *c*², arranged for motion from the fixed one by pressure on the thumb-piece *d*², forming a part thereof, and to the fixed one by the action of a spring, *h*², properly applied to the holder. The holding-faces to the jaws *c c*² are V-shaped, and by and between them a needle is held by their interlock with the grooves of the needle-shank. (See Fig. 8.)

By arranging the jaws to interlock with the needle in its grooves, the needle is insured against lateral or side play.

Needle-holders constructed substantially as described are to be arranged on the wheel M, between the flanges N, as before stated, and at suitable distances apart, with the open side up, so that as they pass around to the cutting-wheels the needle will be exposed to their action.

In setting the needles in the holders care must be taken to have the wall of the eye which it is desired to have acted upon by the cutters exposed in the proper position and plane therefor.

To facilitate the setting of the needles in the holders, a stop or bearing, *f*, is applied to the wheel at each holder, forming a fixed point, against which the tail end of the needle-shank is to be brought, the stops *f* being made to insure the proper position of the needle-eye in the holder. The stops *f* are, of course, to be varied according to the different length of shanks to needles for the various sewing-machines, and, if desired, can be made in sections, attached together by slot and set-screw, so that they can be adjusted in themselves for different lengths of needles.

The needle-holders are arranged on the wheel to turn in the flanges N thereof, said turning being produced by the action of a cam-surface, A⁴, upon which an arm, B⁴, attached to the needle-holder bears and travels as the wheel revolves, a spring, C⁴, of the needle-holder confining said arm to the cam. This cam is fixed to the upright A, and is to be made of suitable shape to produce a quarter-turn of the needle-holder, to bring the needle into proper position for being cut to a point (see A⁵, Fig. 9) in the eye-wall, by presenting first the one edge and then the other of the eye-wall to the cutter, which must be suitable therefor, and properly and relatively arranged for such acting part of said cam—as, for instance, cutter A².

In lieu of arranging the needle-holders to turn in the flanges, they may be made stationary, it being only necessary to have them turn when the needles are to be cut to a point, as before stated.

Having thus described my improvements, I shall state my claims, as follows:

What I claim, and desire to secure by Letters Patent, is—

1. The combination of the cutting wheels or disks Y Z, constructed substantially as described, mechanism to impart rotary motion to said cutting wheels or disks, the carrying-

wheel M and mechanism for revolving the same, and one or more needle-holders located on the periphery of said wheel M, and arranged thereon so that the axis of the needle held by them shall lie in a plane perpendicular to the plane of the several cutters, substantially as set forth.

2. In combination with the subject-matter of the first clause, the cutter A², substantially as described.

3. The needle-holder P, constructed substantially as described.

4. The combination of the carrying-wheel M, needle-holder P, arm B⁴, spring C⁴, and cam A⁴, substantially as described.

5. The combination, with the subject-matter of the first clause of claim, mechanism to impart oscillatory motion to the needle-holder, substantially as described.

6. The combination of the stop *f* with the subject-matter of the fourth clause, substantially as described.

The above specification of my invention signed by me this 23d day of February, A.D. 1870.

JOS. B. BLANCHARD.

Witnesses:

EDWIN W. BROWN,
CHARLES W. HOLDEN.